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UNDERSTANDING ENVIRONMENTAL-ECONOMIC INTEGRATION

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ABSTRACT

There is accumulating evidence that economic activity has reached a scale sufficient to cause global changes in the environment. The upsurge of interest in environmental-economic integration is a rational response to this situation.

Much of today's conventional wisdom on environmental-economic issues is derived from the work of a few economists who, for 200 years, have been trying to understand the relationships between the economy and the environment. This paper provides an overview of the theories, empirical work and policy prescriptions of these economists from Adam Smith to those of today.

The early economists such as Smith, Thomas Malthus and David Ricardo, concerned themselves with the question of the sustainability of economic growth in a limiting environment. Their pessimistic prognosis earned economics the epithet of the 'dismal science'. J.S. Mill accepted the analysis of his predecessors but was more sanguine about the prospects of life in a stationary economy.

At about the time that Marx was arguing that capitalism contained the seeds of its own destruction, more conventional economists such as Walras were establishing the theoretical foundations of the market system. To do so they made assumptions which effectively isolated the economy from its environment.

In the early part of the twentieth century two writers in particular, concerned themselves with environmental-economic integration. Harold Hotelling established the principles for the optimal rate of depletion of a finite resource. A.C. Pigou observed that economic activity could have unintended effects on third parties which were beyond the control of the market. He chose pollution as an example of these 'externalities' which drive a wedge between the private costs registered in the market and the full 'social costs' of production and consumption. Externalities and social costs have become the analytical focal point for much of the work in environmental economics that continues today.

The decade following World War II saw the first of many attempts to evaluate social costs. At the same time there was a reawakening of interest in the concerns of the early economists: were there sufficient resources to sustain economic growth in the post-war era? The Economics of Conservation written by Canada's A.D. Scott in the nineteen fifties further explored the market incentives for conservation. He stressed the role that prices play in encouraging the conservation of scarce resources. Scott and others also did original work on 'common property' resources, showing that over-fishing was unavoidable under a market system where fishing rights were not protected.

The analyses of Pigou, Scott and others underscored what many non-economists already knew. Left to itself, the market system could not be relied on to protect the environment. Policy intervention by government was required.

Economists argued, as they still do, that the best type of intervention is that which most closely mirrors the workings of the market. Hence, they promote benefit-cost studies that show how an efficient market would work to protect the environment if the structural reasons for its failure to do so did not exist. Economists also advocate the use of tradeable emission rights and emission charges as two ways of achieving environmental objectives in the most economically efficient manner.

Twenty years ago Kenneth Boulding prompted a reconceptualization of environmental-economic integration. He wrote about the economics of 'spaceship earth' and emphasised that the earth is a closed system. All materials used in economic activity must eventually be disposed of on Earth. Very quickly economists reformulated the basic, general equilibrium theory of markets developed 100 years earlier by Walras. In doing so they stressed that externalities were all-pervasive and not just occasional exceptions to an otherwise smoothly functioning system. Attempts were made by this author and others to estimate the magnitude of these material flows so that conventional measures of economic activity could be tied quantitatively to the environment.

The next theoretical breakthrough came in 1971 with Georgescu-Roegen's study of the entropy law and the economic process, a difficult work that is still being digested by economic theorists. Economic activity does not merely recycle the earth's resources, it irreversibly degrades them. This could have serious implications for the sustainability of economic growth in the long term.

Most recently, Perrings has produced a work which not only makes Georgescu-Roegen's study a little more transparent, but highlights the fundamental inadequacy of our economic system to regulate its interactions with the environment. The policy implications of his analysis can only be sketched out at this time and this paper closes with an attempt to do so.

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